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Longitudinal effect in the dependence of the critical frequency of the midlatitude E layer on solar activity

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Abstract

Variations in the critical frequency of the E layer, foE, measured at Boulder and Tashkent stations located at almost coinciding geographical latitudes but at strongly different geomagnetic latitudes are analyzed. The following conclusions are drawn. (a) Late in the fall and in the winter, the foE values at these stations are distinctly different at low solar activity. This difference decreases with increasing solar activity. In other words, the longitudinal effect in the foE dependence on solar activity is significant for these conditions. (b) This effect is almost absent in summer; i.e., the difference in foE dependence on solar activity at these stations is insignificant for the given season. It has been substantiated that the dependence of the nitric oxide concentration [NO] on geomagnetic latitude, season, and solar activity is one of the main causes of this longitudinal effect. © Pleiades Publishing, Ltd. 2007.

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